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Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/KRIDL/W.No.03/CSR-04/310g/Pre Slab/2017-18

15.04.2017

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CORE

* Customer	:	**Asst. Executive Engineer,** Yelahanka Satellite Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of work	:	Improvements to Roads and Drains in Attur Village Govt. School road, Post office road of Attur Ward No.03, BBMP, Bangalore.
* Reference	:	BBMP/EE(YNK.D)/W.O/144/2016-17 Dated: 31.03.2017
* Sample ID	:	Precast slab (200mm thick)
* Grade of Concrete	:	M_{20}
Techinical Reference	:	IS:516-1959 (RA- 2013), SP-24:1983.
Sample Received on	:	10.04.2017
Date of Testing	:	15.04.2017

Sl. No	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	81.00	0.399	2508.75	1.62	0.959	29.55	15.05	16.25	16.95	21.19
2	50.00	83.00	0.412	2528.07	1.66	0.963	32.55	16.58	17.90	17.25	21.56
3	50.00	84.00	0.418	2534.35	1.68	0.965	33.65	17.14	18.51	17.87	22.34

* Information is furnished by the Customer/Representative

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AE-07

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Job No.: CTCE/BBMP/KRIDL/W.No.03/GSB-2/2017-18 15.04.2017

TEST REPORT ON GRADATION FOR CLOSE-GRADED GRANULAR SUB BASE

* Customer	:	**Asst. Executive Engineer,** Yelahanka Satellite Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of work	:	Improvements to Roads and Drains in Attur Village Govt. School road, Post office road of Attur Ward No.03, BBMP, Bangalore.
* Reference	:	BBMP/EE(YNK.D)/W.O/144/2016-17 Dated: 31.03.2017
* Sample ID	:	Close Graded-II
Technical Reference	:	IS : 2720 (Part - 4) 1985 (RA-2010), MORTH Table : 400-1
Date of Testing	:	15.04.2017

Oven Dry Wt (gm) : 5000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specified Limits
53	0	0	0	100	100
26.5	325	325	6.50	93.50	70-100
9.5	1725	2050	41.00	59.00	50-80
4.75	650	2700	54.00	46.00	40-65
2.36	630	3330	66.60	33.40	30-50
0.425	575	3905	78.10	21.90	15-25
0.075	695	4600	92.00	8.00	3-10
PAN	400				
Total	5000				

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* Information is furnished by the Customer/Representative

Remarks: Satisfies MORTH Specifications as per Table 400-1, Grading II

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Job No.: CTCE/BBMP/KRIDL/W.No.03/GSB-II/AL/2017-18 Date : 15.04.2017

ATTERBERG LIMITS TEST FOR GSB
MORTH TABLE-400-01

* **Customer** : **Asst. Executive Engineer,** Yelahanka Satellite Sub Division, BBMP, Bangalore.

* **Agency** : **Technical Manager (West),** KRIDL, Bangalore.

* **Name of Work** : Improvements to Roads and Drains in Attur Village Govt. School road, Post office road of Attur Ward No.03, BBMP, Bangalore.

* **Reference** : BBMP/EE(YNK.D)/W.O/144/2016-17 Dated: 31.03.2017

Date of Testing : 15.04.2017

Sample Source : GSB, Mix Plant

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	22.50	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

*Information is furnished by the Customer/Representative.

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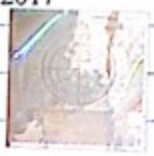
Job No.: CTCE/BBMP/KRIDL/W.No.03/WMM/Gradation/2017-18 19.04.2017

TEST REPORT ON GRADATION OF WET MIX MACADAM

* Customer	:	**Asst. Executive Engineer,** Yelahanka Satellite Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements to Roads and Drains in Attur Village Govt. School road, Post office road of Attur Ward No.03, BBMP, Bangalore.
* Reference	:	BBMP/EE(YNK.D)/W.O/144/2016-17 Dated: 31.03.2017
Sample ID	:	Wet Mix Macadam
Technical Reference	:	IS 2386 (part-1)1963 (RA-2016)
Date of Testing	:	19.04.2017



Oven Dry Wt (gm): 5000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits As per Morth Table 400-11
53	0	0	0	100	100
45	165	165	3.3	96.7	95-100
22.4	1535	1700	34.00	66.00	60-80
11.2	1020	2720	54.40	45.60	40-60
4.75	590	3310	66.20	33.80	25-40
2.36	525	3835	76.70	23.30	15-30
0.600	560	4395	87.90	12.10	8-22
0.075	400	4795	95.90	4.10	0-8

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Job No.: CTCE/BBMP/KRIDL/W.No.03/WMM/AIV/2017-18 19.04.2017

TEST REPORT ON IMPACT VALUE OF AGGREGATE

* Customer	:	**Asst. Executive Engineer,** Yelahanka Satellite Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements to Roads and Drains in Attur Village Govt. School road, Post office road of Attur Ward No.03, BBMP, Bangalore.
* Reference	:	BBMP/EE(YNK.D)/W.O/144/2016-17 Dated: 31.03.2017
* Sample ID	:	Wet Mix Macadam
Technical Reference	:	IS: 2386 Part IV
Date of Testing	:	19.04.2017

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	392	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	304	306	
4	Aggregate Impact value = percent fines 100* (W2/W1)%	21.85	21.94	21.89

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Impact value for Wet Mix Macadam is 30%

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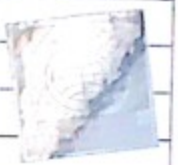
Job No.: CTCE/BBMP/KRIDL/W.No.03/WMM/Shape.T/2017-18 19.04.2017

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Yelahanka Satellite Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements to Roads and Drains in Attur Village Govt. School road, Post office road of Attur Ward No.03, BBMP, Bangalore.
* Reference	:	BBMP/EE(YNK.D)/W.O/144/2016-17 Dated: 31.03.2017
* Sample ID	:	Wet Mix Macadam
Technical Reference	:	IS 2386(Part 1) 1963 (RA 2016)
Date of Testing	:	19.04.2017



Sl.No.	Description	Result
1	Flakiness Index	11.35%
2	Elongation Index	13.92%
3	Combined Flakiness & Elongation Index	25.27%

*Information is furnished by the Customer/Representative.

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Comments:

→ Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/KRIDL/W.No.03/CSR-04/310g/QB(DBM)/2017-18 27.04.2017

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

* Customer	:	**Asst. Executive Engineer,** Yelahanka Satellite Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of work	:	Improvements to Roads and Drains in Attur Village Govt. School road, Post office road of Attur Ward No.03, BBMP, Bangalore.
* PMC Reference	:	BBMP/EE(YNK.D)/W.O/144/2016-17 Dated: 31.03.2017
* Sample ID	:	Bitumen
Source/ Location	:	Hot Mix Plant, Bangalore.
Sample Received on	:	25.04.2017
Period of Testing	:	27.04.2017

The results of the tests conducted on the bitumen sample are as follows:

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2014)	84	80 to 100
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2014)	46	Min. 40
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2014)	100 >	Min. 75
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2014)	302	Min. 220

* Information is furnished by the Customer/Representative

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Job No.: CTCE/BBMP/KRIDL/W.No.03/DBM/AIV/2017-18

27.04.2017

TEST REPORT ON AGGREGATE IMPACT VALUE

* Customer	:	**Asst. Executive Engineer,** Yelahanka Satellite Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of the Work	:	Improvements to Roads and Drains in Attur Village Govt. School road, Post office road of Attur Ward No.03, BBMP, Bangalore.
* Reference	:	BBMP/EE(YNK.D)/W.O/144/2016-17 Dated: 31.03.2017
* Sample ID	:	Hot Mix Plant, Bangalore
Technical Reference	:	IS : 2386(Part -4)-1963 (RA-2011)
* Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	27.04.2017

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	389	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	84	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	304	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	21.82	21.85	21.83

* Information is furnished by the Customer/Representative

Comments:

→ Maximum allowable Aggregate Impact value for Dense Graded Bituminous Macadam is 27%

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Job No.: CTCE/BBMP/KRIDL/W.No.03/DBM/Shape.T/2017-18 27.04.2017

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Yelahanka Satellite Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements to Roads and Drains in Attur Village Govt. School road, Post office road of Attur Ward No.03, BBMP, Bangalore.
* Reference	:	BBMP/EE(YNK.D)/W.O/144/2016-17 Dated: 31.03.2017
* Sample ID	:	Hot Mix Plant, Bangalore
Technical Reference	:	IS : 2386(Part -1)-1963 (RA-2011)
* Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	27.04.2017

Sl.No.	Description	Result
1	Flakiness Index	12.35%
2	Elongation Index	13.29%
3	Combined Flakiness & Elongation Index	25.64%

* Information is furnished by the Customer/Representative

Comments:

→ Maximum allowable Flakiness & Elongation Index for Dense Graded Bituminous Macadam is 30%

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Job No.: CTCE/BBMP/KRIDL/W.No.03/DBM/Stripping/2017-18 28.04.2017

TEST REPORT ON STRIPPING VALUE OF ROAD AGGREGATE (STATIC IMMERSION TEST)

* Customer	:	**Asst. Executive Engineer,** Yelahanka Satellite Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of the work	:	Improvements to Roads and Drains in Attur Village Govt. School road, Post office road of Attur Ward No.03, BBMP, Bangalore.
* Reference	:	BBMP/EE(YNK.D)/W.O/144/2016-17 Dated: 31.03.2017
Technical Reference	:	IS: 6241
* Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	28.04.2017

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.00 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.1	3.20	96.80
2	3.2		
3	3.3		

* Information is furnished by the Customer/Representative

Comments:

→ Minimum allowable Aggregate retained coating for Dense Graded Bituminous Macadam is 95%

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Job No.: CTCE/BBMP/KRIDL/W.No.03/DBM/Bitumen/2017-18 28.04.2017

TEST REPORT ON BITUMEN CONTENT OF DENSE GRADED BITUMINOUS MACADAM MIX

* Customer	:	**Asst. Executive Engineer,** Yelahanka Satellite Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of the Work	:	Improvements to Roads and Drains in Attur Village Govt. School road, Post office road of Attur Ward No.03, BBMP, Bangalore.
* Reference	:	BBMP/EE(YNK.D)/W.O/144/2016-17 Dated: 31.03.2017
* Sample ID	:	Attur Main Road Ward No.03.
Technical Reference	:	IRC:SP:11-1984
Date of Testing	:	28.04.2017

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	478	476
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	22	24.00
7. Bitumen content in %	4.40	4.80
8. Average	4.60	

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Job No.: CTCE/BBMP/KRIDL/W.No.02/DBM/Bitumen/2017-18

28.04.2017

TEST REPORT ON BITUMEN CONTENT AFTER GRADATION OF DENSE GRADED BITUMINOUS MACADAM MIX

* Customer	:	**Asst. Executive Engineer,** Yelahanka Satellite Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of the Work	:	Improvements to Roads and Drains in Attur Village Govt. School road, Post office road of Attur Ward No.03, BBMP, Bangalore.
* Reference	:	BBMP/EE(YNK.D)/W.O/144/2016-17 Dated: 31.03.2017
* Sample ID	:	Attur Main Road Ward No.03.
Technical Reference	:	IS 2386 and IRC:SP:11-1984
Date of Testing	:	28.04.2017

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-10 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	35.12	7.35	7.35	92.65	90 - 100
19	86.65	18.13	25.47	74.53	71 - 95
13.2	62.32	13.04	38.51	61.49	56 - 80
4.75	86.65	18.13	56.64	43.36	38 - 54
2.36	42.25	8.84	65.48	34.52	28 - 42
0.3	82.32	17.22	82.70	17.30	7 - 21
0.075	133.8	27.99	93.47	6.53	2 - 8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-10 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	33.25	6.99	6.99	93.01	90 - 100
19	88.25	18.54	25.53	74.47	71 - 95
13.2	76.65	16.10	41.63	58.37	56 - 80
4.75	86.62	18.20	59.83	40.17	38 - 54
2.36	42.25	8.88	68.70	31.30	28 - 42
0.3	80.23	16.86	85.56	14.44	7 - 21
0.075	118.2	24.83	93.53	6.47	2 - 8

AE W3

* Information is furnished by the Customer/Representative

Note:

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⇒Any Query regarding the report must be reported within 30 days from the date of testing.

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AE-07

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CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory
An ISO 9001:2008 Certified Company
NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/KRIDL/W.No.03/DBM/Agg/2017-18 28.04.2017

TEST REPORT ON GRADATION FOR AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Yelahanka Satellite Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of the Work	:	Improvements to Roads and Drains in Attur Village Govt. School road, Post office road of Attur Ward No.03, BBMP, Bangalore.
* Reference	:	BBMP/EE(YNK.D)/W.O/144/2016-17 Dated: 31.03.2017
* Sample ID	:	Hot Mix Plant, Bangalore
Technical Reference	:	IS : 2386(Part -1)-1963 (RA-2011)
* Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	28.04.2017

Total Weight of Sample: 14200 gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
37.50	0	0.0	0	100	100	Gradation satisfies Grade II MORTH Table 500-10 specification
26.50	845	6.0	5.95	94.05	90 - 100	
19.00	2505	17.6	23.59	76.41	71 - 95	
13.20	2130	15.0	38.59	61.41	56 - 80	
4.75	2585	18.2	56.80	43.20	38 - 54	
2.36	1585	11.2	67.96	32.04	28 - 42	
0.300	2350	16.5	84.51	15.49	7 - 21	
0.075	1125	7.9	92.43	7.57	2 - 8	

Total Weight of Sample: 14300 gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
37.5	0	0.0	0	100	100	Gradation satisfies Grade II MORTH Table 500-10 specification
26.5	865	6.0	6.05	93.95	90 - 100	
19	2525	17.7	23.71	76.29	71 - 95	
13.2	2535	17.7	41.43	58.57	56 - 80	
4.75	2495	17.4	58.88	41.12	38 - 54	
2.360	1590	11.1	70.00	30.00	28 - 42	
0.300	2485	17.4	87.38	12.62	7 - 21	
0.075	1030	7.2	94.58	5.42	2 - 8	

AE W3

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AE-02

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